Claims:

1. An improved process for the preparation of bio-diesel, which comprises
   i) heating oil having by specific gravity in the range of 0.85 – 0.96 and iodine value not exceeding 208, to a temperature not exceeding 120°C for not less than 2hrs followed by transesterification with 8 to 42% w/w, of alcohol of general formula R-OH, where R represents (C_nH_{2n+1}), n being any integer between 1 and 5, in presence of not more than 0.55% w/w, of a catalyst, at a temperature higher than the boiling point of the alcohol but not exceeding 215°C for a period of not less than 30 minutes under continuous turbulent conditions to obtain a mixture of ester and glycerol,
   ii) Subjecting the mixture, as formed in step (i) to separation of the esterified oil for a period of not less than 4 hrs followed by purification for a period of not less than 8 hrs. and repeating the process of separation as well as purification in succession for not less than three times to obtain biodiesel.
2. A process, as claimed in claim 1 wherein the oil is selected from ricebran oil, cottonseed oil , soybean oil, sunflower oil , castor oil, coconut oil.
3. A process, as claimed in claim 1, wherein the alcohol is selected from methanol, ethanol, n-propanol, n-butanol, and n-pentanol
4. A process, as claimed in claim 1 wherein the catalyst is selected from sodium hydroxide, potassium hydroxide.
5. A process, as claimed in claim 1 wherein the esterified oil is separated by decanting, centrifuging, gravity separation, settling, either alone or in any combination.
6. A process, as claimed in claim 1 wherein the purification of the mixture is by bubble washing involving bubble size of 1-3mm, micro filtration with not less than 5micron filter, centrifuging, either alone or in any combination.
7. A process, as claimed in claim 1 wherein the Reynolds number (N_{Re}) for maintaining turbulence is adjusted at not less than 4000 irrespective of the type of reactor.